phonal openings. The third is an anteroventral pedal opening. The siphons are separate, mobile, and fully retractable (Figure 4a). They can be extended for a distance equal to about one-half shell length and may move independently of each other.

The gills are eulamellibranchiate and the outer demibranch of each is upturned so that its ventral edge lies dorsally within the shell (Figure 4b). The inner demibranch lies ventrally within the same plane (Figure 4c). Thus each gill appears to be a single leaflet rather than the usual two acutely joined leaflets.

The palps (Figure 4d) are broad and moderately long. The outer surface of each is smooth. The oralward one-fourth of the inner surface is also smooth but the remaining three-fourths of the inner surface is covered with 13–15 thick ridges.

The foot (Figure 4e) is large and anteriorly lobate. The dorsal one-fourth of the foot is covered by a series of fine, parallel ridges that run anteroposteriorly. The ventral three-fourths is covered by a series of longitudinal ridges. These ridges are most evident when the foot is moving and some may therefore only be temporary wrinkles.

The visceral mass (Figure 4f) is located anterodorsally near the large, semicircular anterior adductor muscle (Figure 4g). The posterior adductor muscle is smaller and subcircular in cross section (Figure 4h).

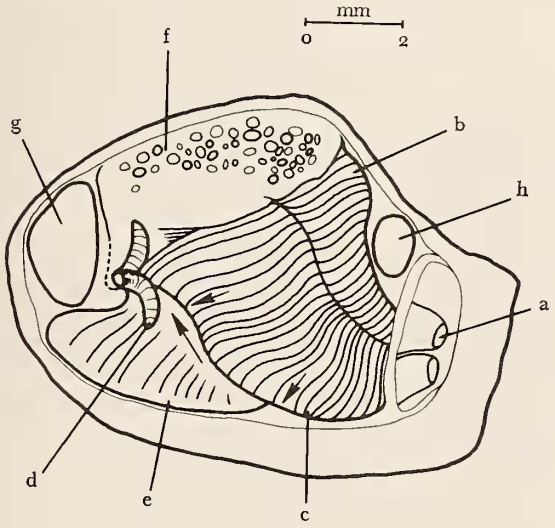

Figure 4

Soft Parts

a – siphons b – outer demibranch c – inner demibranch
d – palps e – foot f – visceral mass
g – anterior adductor muscle h – posterior adductor muscle
arrows = gill ciliary tracts

LIFE HABITS

This species was dredged live at depths of 60 m–65 m from localities ranging from 2.5 km ENE of Sydney Harbor heads to 4 km east of Malabar, near Sydney, Australia. It occurs on substrata ranging from sandy gravel to muddy fine sand. The bottom temperature at the time of collection was 15.5° C and the dissolved oxygen content of the water ranged from 5.2 mg/l to 6.8 mg/l.

Associated live molluscs include the pelecypods *Neotrigonia* and *Nucula* and the gastropods *Conus* and *Nassarius*. Other associated live fauna include small solitary corals, sabellarid polychaetes, echinoids, and crustaceans.

In the laboratory, the animal did not burrow when placed on the sediment with the flat valve downward. Nevertheless, when placed convex valve downward, it goes through the following sequence of movements:

1) valves open and siphons are slightly protruded
2) siphons extend further and foot emerges
3) foot is protruded into the sediment and animal burrows, anterior first, by alternately extending and retracting the foot
4) locomotion stops when posterior margin of shell is even with or slightly above sediment surface. The commissure plane is usually inclined about 30°–45° away from the vertical and the convex valve is downward (Figure 5).

This sequence always took at least ten minutes to complete.

This species feeds on suspended particles drawn into the mantle cavity through the inhalant siphon. All particles eventually ingested first land on the gills and travel on ciliary tracts to the palps, then mouth. There is only one oralward ciliary tract on each gill and it is located along the ventral edge of the inner demibranch. Particles reaching this tract get there by traveling along a series of parallel, ventrally directed tracts which occur on the reflexed inner surface of the outer demibranch and the outer surface of the inner demibranch (Figure 4–arrows). Then, this material passes directly from the ventral edge of the inner demibranch to the ridged, then smooth portion of the palps and from there, into the mouth.

Particles are rejected from the gills by posteriorly located, ventrally directed ciliary tracts. These tracts usually pass the particles directly to the mantle. Material rejected by the palps usually passes to the foot. The foot in turn passes this material to the mantle. The way in which ma-